

## WEST Search History

DATE: Friday, October 15, 2004

<u>Hide?</u>	<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=AND</i>			
<input type="checkbox"/>	L1	salmonella same chlamyd\$	2194
<input type="checkbox"/>	L2	L1.ti,ab,clm.	276
<input type="checkbox"/>	L3	L2 and (avirulent or a-virulent or mutant or mutation or attenuate or attenuation or attenuat\$ or modifi\$ or alter\$ or gene or genetic\$ or vector)	194
<input type="checkbox"/>	L4	L2 same (avirulent or a-virulent or mutant or mutation or attenuate or attenuation or attenuat\$ or modifi\$ or alter\$ or gene or genetic\$ or vector)	32
<i>DB=USPT,PGPB,JPAB,EPAB; PLUR=YES; OP=AND</i>			
<input type="checkbox"/>	L5	(US-6676949-B2)![pn]	0
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=AND</i>			
<input type="checkbox"/>	L6	momp\$.clm.	29
<input type="checkbox"/>	L7	curtiss.in. and chlamyd\$.clm.	0
<input type="checkbox"/>	L8	chlamyd\$.clm.	774
<input type="checkbox"/>	L9	L8 and \$tiss.in.	1

END OF SEARCH HISTORY

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**Search Results - Record(s) 1 through 32 of 32 returned.**

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- 1. [20040152099](#). 17 Nov 03. 05 Aug 04. Screening method for attenuating or virulence defective microbial cells. Freissler, Elke, et al. 435/6; C12Q001/68.
- 2. [20040137011](#). 01 Jul 03. 15 Jul 04. Methods and compositions for the identification of antibiotics that are not susceptible to antibiotic resistance. Cunningham, Phillip R.. 424/190.1; 424/191.1 435/320.1 A61K039/02 A61K039/002 C12N015/74.
- 3. [20040136963](#). 19 Dec 03. 15 Jul 04. Simian adenovirus vectors and methods of use. Wilson, James M., et al. 424/93.2; 435/456 A61K048/00 C12N015/861.
- 4. [20040025866](#). 01 Aug 03. 12 Feb 04. Drug delivery system including holder and drug container. Vedrine, Lionel, et al. 128/200.19; B05B007/00 A61M011/00.
- 5. [20030203473](#). 20 Nov 02. 30 Oct 03. Microbial SUMO protease homologs. Godzik, Adam, et al. 435/252.3; 536/23.1 C07H021/02 C07H021/04 C12N001/20.
- 6. [20030153527](#). 21 Feb 03. 14 Aug 03. Method for introducing and expressing genes in animal cells, and live invasive bacterial vectors for use in the same. Powell, Robert J., et al. 514/44; 435/252.3 435/252.33 435/455 A61K048/00 C12N001/21 C12N015/85.
- 7. [20020193778](#). 08 Feb 02. 19 Dec 02. Method of intradermally injecting substances. Alchas, Paul G., et al. 604/506; 604/187 A61M031/00.
- 8. [20020193740](#). 10 Jan 02. 19 Dec 02. Method of intradermally injecting substances. Alchas, Paul G., et al. 604/117; 604/507 A61M031/00.
- 9. [20020038111](#). 13 Apr 01. 28 Mar 02. Method of intradermally injecting substances. Alchas, Paul G., et al. 604/500; 604/187 604/522 606/172 A61M005/00 A61M031/00.
- 10. [20020022718](#). 19 Dec 00. 21 Feb 02. Genes identified as required for proliferation of E. coli. Forsyth, R. Allyn, et al. 536/23.1; 435/183 435/325 435/6 435/69.1 C07H021/02 C07H021/04 C12Q001/68 C12N009/00 C12P021/02 C12N005/06.
- 11. [20020010428](#). 10 Apr 01. 24 Jan 02. Drug delivery system including holder and drug container. Vedrine, Lionel, et al. 604/187; A61M005/00.
- 12. [6689118](#). 08 Feb 02; 10 Feb 04. Method of intradermally injecting substances. Alchas; Paul G., et al. 604/506; 604/117. A61M031/00.
- 13. [6569143](#). 13 Apr 01; 27 May 03. Method of intradermally injecting substances. Alchas; Paul G., et al. 604/506; 604/117. A61M031/00.

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14. 6500419. 07 Apr 00; 31 Dec 02. Method for introducing and expressing RNA in animal cells. Hone; David M., et al. 424/93.2; 424/93.1 435/252.3 435/320.1 435/455 514/44. A61K048/00 C12N001/21 C12N015/87.
- 
15. 6150170. 30 Jul 98; 21 Nov 00. Method for introducing and expressing genes in animal cells, and live invasive bacterial vectors for use in the same. Powell; Robert J., et al. 435/455; 424/184.1 424/93.1 424/93.21 424/93.4 435/320.1 435/472 435/480 435/69.1 514/44. C12N015/63 C12N015/00 C12N005/00 A01N043/04 A61K031/70.
- 
16. 5877159. 03 May 95; 02 Mar 99. Method for introducing and expressing genes in animal cells and live invasive bacterial vectors for use in the same. Powell; Robert J., et al. 514/44; 424/184.1 424/93.1 424/93.21 424/93.4 435/235.1 435/320.1 435/472 435/480 435/69.1 536/24.1. A01N043/04 A61K031/70 C12N015/63.
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17. 4861709. 31 May 85; 29 Aug 89. Detection and/or identification of microorganisms in a test sample using bioluminescence or other exogenous genetically-introduced marker. Ulitzur; Shimon Y., et al. 435/6; 435/14 435/170 435/18 435/19 435/21 435/25 435/26 435/261 435/29 435/32 435/34 435/36 435/38 435/5 435/8 435/822 536/23.2. C12Q001/68 C12Q001/66 C12Q001/02 C12Q001/04.
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18. US20030134274A. Detecting nucleic acid in sample comprises hybridizing nucleic acid to probe that comprises crosslinking agent forming covalent crosslink between probe and nucleic acid and detecting crosslinked nucleic acid pair. ALBAGLI, D, et al. C07H021/00 C12Q001/68 C12Q001/70.
- 
19. US 6495676B. Detecting target nucleic acid, by hybridizing target to crosslinkable probe with a complementary polynucleotide and crosslinking group, activating group to crosslink probe and target, detecting crosslinked pair. ALBAGLI, D, et al. C07H021/00.
- 
20. WO 200286154A. Novel genetically labeled bacteriophage for use in prophylactic and therapeutic treatment of bacterial infections in plants, livestock, birds and humans, and for environmental clean up and sanitation. ALLAIN, B, et al. C12Q001/68.
- 
21. WO 200283216A. Drug delivery device containing a substance e.g. drug is used for the intradermal injection of the substance into the skin of an animal. ALARCON, J B, et al. A61K039/145 A61K045/00 A61M005/28 A61M005/32 A61M005/46.
- 
22. US20020137233A. Optically active polymer useful as biopathogen or bacterial sensor, comprises diacetylene unit at center of hydrophobic core, glutamic acid headgroup on one hydrophilic end and oxy acid end group on other end. CHENG, Q, et al. C12Q001/70 G01N033/544 G01N033/545.
- 
23. GB 2370838A. Immunogenic complex useful as vaccine for treating diseases caused by microbes, e.g. Escherichia coli, Candida or diseases caused by periodontal bacteria, has at least one ribosomal complex and adhesin of a microbe. TIMMERMAN, B. A61K039/00 A61K039/02 A61K039/38 A61P031/04 C07H021/02 C07K014/195 C07K017/00.
- 
24. US20020064517A. Transformation of cells with nucleic acid for use in gene therapy, comprises administering nucleic acid to a cell and applying a fibrin gel to entrap the nucleic acid. CEDERHOLM-WILLIAMS, S A. A61K009/06 A61K035/00 A61K039/00 A61K039/39 A61K039/395 A61K047/42 A61K048/00 C12N015/09 C12N015/11 C12N015/63.
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25. WO 200034498A. Vaccination against diseases caused by Chlamydia infection involves initial

administration of attenuated bacteria containing nucleic acid encoding Chlamydia protein, followed by administration of Chlamydia protein. BRUNHAM, R C, et al. A61K031/70 A61K035/74 A61K035/76 A61K038/00 A61K039/00 A61K039/02 A61K039/112 A61K039/118 A61K039/38 A61K048/00 A61P015/00 A61P027/02 A61P031/04 C12N001/20 C12N001/21 C12N001:21 C12N015/09 C12N015/31 C12N015/86 C12N015/87 C12Q001/68 C12R001:42 C12N001/21 C12R001:42 C12R001:42 C12N001/21.

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26. WO 200018949A. Composition used to facilitate uptake of aminoglycoside antibiotic into cells comprises phosphoinositide polyphosphate and/or inositol polyphosphate and polyamine. DEWALD, D B, et al. A61F002/00 A61F013/00 C12Q000/00.

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27. WO 200018434A. New mutant cholera holotoxin having a point mutation at amino acid position 29 of the A subunit useful as an adjuvant in an antigenic composition to enhance the immune response in a vertebrate host to a selected antigen from a pathogen. ELDRIDGE, J H, et al. A61K039/00 A61K039/002 A61K039/02 A61K039/095 A61K039/102 A61K039/106 A61K039/12 A61K039/15 A61K039/155 A61K039/245 A61K039/39 A61P037/04 C07K014/14 C07K014/22 C07K014/28 C07K014/285 C07K014:28 C12N001/15 C12N001/19 C12N001/21 C12N005/10 C12N015/09 C12N015/63 C12P021/02.

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28. WO 200014240A. Attenuated gram-negative Salmonella cells, comprising inactivated genes in the SPI2 locus and useful for vaccinating against a range of disorders associated with microbial infections such as stomach and cervical cancers. APFEL, H, et al. A61K039/00 A61K039/106 A61K039/112 A61K039/12 A61K039/245 A61K039/29 A61K048/00 A61P031/04 A61P031/12 A61P035/00 C07K014/005 C07K014/195 C07K014/255 C07K014/47 C07K016/12 C07K019/00 C12N001/21 C12N001:21 C12N007/00 C12N015/09 C12N015/31 C12N015/62 C12N015/63 C12N015/74 C12R001:42 C12N001/21 C12N001/21 C12N001/21 C12R001:01 C12R001:42 C12R001:63 C12R001:42 C12N001/21.

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29. US 6001556A. Polymeric assay film for direct colorimetric detection of small molecules such as pathogens. CHARYCH, D, et al. C12Q001/70.

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30. US 6342352B. New bacterial proteins useful for preparing vaccines for treating bacterial infections, especially shigellosis. MAURELLI, A T, et al. A61K039/02 A61K039/112 A61K039/395 C12N015/82 C12Q001/02 C12Q001/04 C12Q001/68 G01N033/53 G01N033/532 G01N033/554 G01N033/569.

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31. WO 9838320A. New isolated bromelain component protein - used for e.g. treating cancers, immuno: deficiency(s) or diseases which respond to increased nitric oxide production or as a vaccine adjuvant or antimicrobial agent. ENGWERDA, C, et al. A61K038/46 A61K038/48 A61K039/39 A61P003/10 A61P017/02 A61P031/04 A61P031/18 A61P033/06 A61P035/00 A61P037/04 A61P043/00 C07H000/00 C07K000/00 C12N000/00 C12N009/50 C12N015/09 C12N015/57.

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32. DE 19639601A. Parapox virus strain D1701 HindIII fragment I, related recombinant viruses and expression plasmids - useful in vaccines, for expression of foreign DNA and for diagnosis. BUTTNER, M, et al. A61K035/76 A61K038/00 A61K039/00 A61K039/275 A61K048/00 A61P037/02 A61P043/00 C07H021/04 C07K014/065 C12N000/00 C12N007/00 C12N007/01 C12N007/04 C12N015/09 C12N015/11 C12N015/39 C12N015/63 C12N015/86 C12N015/863 G01N033/569 C12N015/09 C12R001:92.

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First Hit

L4: Entry 1 of .32

File: PGPB

Aug 5, 2004

PGPUB-DOCUMENT-NUMBER: 20040152099

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040152099 A1

TITLE: Screening method for attenuating or virulence defective microbial cells

PUBLICATION-DATE: August 5, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Freissler, Elke	Ulm		DE	
M Fuchs, Thilo	Augusburg		DE	
Niesalla, Heide S	Augusburg		DE	
Apfel, Heiko	Nuesass		DE	

APPL-NO: 10/ 477993 [PALM]

DATE FILED: November 17, 2003

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	DOC-ID	APPL-DATE
EP	01112158.9	2001EP-01112158.9	May 17, 2001
EP	0111786.2	2001EP-0111786.2	July 23, 2001

## PCT-DATA:

DATE-FILED	APPL-NO	PUB-NO	PUB-DATE	371-DATE	102 (E) -DATE
May 17, 2002	PCT/EP02/05493				

INT-CL: [07] C12 Q 1/68

US-CL-PUBLISHED: 435/006

US-CL-CURRENT: 435/6

REPRESENTATIVE-FIGURES: NONE

## ABSTRACT:

This invention relates to a novel method for the genome saturating identification of nucleic acid sequences which are essential for infectivity and/or intracellular survival and/or propagation in permissive eukaryotic host cells, in particular microbial sequences. Further, a method for the identification of attenuated microorganisms and novel antimicrobial compounds using the identified essential nucleic acids and proteins encoded thereby is provided.

First Hit

L4: Entry 25 of 32

File: DWPI

Apr 22, 2004

DERWENT-ACC-NO: 2000-431310

DERWENT-WEEK: 200457

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**TITLE:** Vaccination against diseases caused by Chlamydia infection involves initial administration of attenuated bacteria containing nucleic acid encoding Chlamydia protein, followed by administration of Chlamydia protein

INVENTOR: BRUNHAM, R C; MURDIN, A D

PATENT-ASSIGNEE: BRUNHAM R C (BRUNI), CONNAUGHT LAB LTD (CONN), UNIV MANITOBA (UYMAN), AVENTIS PASTEUR LTD (AVET), MURDIN A D (MURDI)

PRIORITY-DATA: 1998US-110855P (December 4, 1998), 1999US-0453289 (December 3, 1999), 1999, 2003US-0699882 (November 4, 2003), 2003US-0699683 (November 4, 2003)

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**PATENT-FAMILY:**

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> AU 772356 B2	April 22, 2004		000	C12N015/87
<input type="checkbox"/> WO 200034498 A1	June 15, 2000	E	032	C12N015/87
<input type="checkbox"/> AU 200015407 A	June 26, 2000		000	C12N015/87
<input type="checkbox"/> EP 1169465 A1	January 9, 2002	E	000	C12N015/87
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<input type="checkbox"/> US 6676949 B2	January 13, 2004		000	C12N015/31
<input type="checkbox"/> US 20040126382 A1	July 1, 2004		000	C12Q001/68
<input type="checkbox"/> US 20040131630 A1	July 8, 2004		000	C12Q001/68

DESIGNATED-STATES: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES ES FI GB GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

**APPLICATION-DATA:**

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
AU 772356B2	December 2, 1999	2000AU-0015407	
AU 772356B2		AU 200015407	Previous Publ.

AU 772356B2		WO 200034498	Based on
WO 200034498A1	December 2, 1999	1999WO-CA01151	
AU 200015407A	December 2, 1999	2000AU-0015407	
AU 200015407A		WO 200034498	Based on
EP 1169465A1	December 2, 1999	1999EP-0957789	
EP 1169465A1	December 2, 1999	1999WO-CA01151	
EP 1169465A1		WO 200034498	Based on
US20020168382A1	December 4, 1998	1998US-110855P	Provisional
US20020168382A1	December 3, 1999	1999US-0453289	
JP2002531135W	December 2, 1999	1999WO-CA01151	
JP2002531135W	December 2, 1999	2000JP-0586931	
JP2002531135W		WO 200034498	Based on
NZ 512730A	December 2, 1999	1999NZ-0512730	
NZ 512730A	December 2, 1999	1999WO-CA01151	
NZ 512730A		WO 200034498	Based on
US 6676949B2	December 4, 1998	1998US-110855P	Provisional
US 6676949B2	December 3, 1999	1999US-0453289	
US20040126382A1	December 4, 1998	1998US-110855P	Provisional
US20040126382A1	December 3, 1999	1999US-0453289	Div ex
US20040126382A1	November 4, 2003	2003US-0699882	
US20040126382A1		US 6676949	Div ex
US20040131630A1	December 4, 1998	1998US-110855P	Provisional
US20040131630A1	December 3, 1999	1999US-0453289	Div ex
US20040131630A1	November 4, 2003	2003US-0699683	
US20040131630A1		US 6676949	Div ex

INT-CL (IPC): A61 K 31/70; A61 K 35/74; A61 K 35/76; A61 K 38/00; A61 K 39/00; A61 K 39/02; A61 K 39/112; A61 K 39/118; A61 K 39/38; A61 K 48/00; A61 P 15/00; A61 P 27/02; A61 P 31/04; C12 N 1/20; C12 N 1/21; C12 N 1:21; C12 N 15/09; C12 N 15/31; C12 N 15/86; C12 N 15/87; C12 Q 1/68; C12 R 1:42; C12 N 1/21; C12 R 1:42; C12 R 1:42; C12 N 1/21

ABSTRACTED-PUB-NO: WO 200034498A

BASIC-ABSTRACT:

NOVELTY - Immunizing (I) a host against infection caused by a strain of Chlamydia, comprises administration of an attenuated bacteria harboring a nucleic acid molecule (II) encoding an immunoprotection-inducing Chlamydia protein followed by administration of purified Chlamydia protein or its fragment, which generates a Chlamydia protein specific immune response in the host.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an attenuated strain of bacteria harboring (II).

ACTIVITY - Antibiotic.

MECHANISM OF ACTION - Vaccine.

Salmonella typhimurium strain 22-4 was transfected with MOMP gene containing plasmid, pcDNA3/MOMP by electroporation and cultured. Groups of Balb/c mice were immunized with 105-1010 CFU of attenuated strains of Salmonella. Four inoculation at

at two week intervals were administered. A single protein boost with 1 micro g Chlamydia trachomatis mouse pneumonitis strain (MoPn) MOMP embedded in ISCOM was given intramuscularly at the time of forth immunization. Mice were challenged with 5000 IFU MoPn EB intranasally two weeks after the last immunization and were sacrificed at day 10 post infection. The mice were found to be effectively protected where protein index = 4.1, against MoPn lung infection.

USE - The method is useful in vaccination for protection of a host against diseases caused by Chlamydia infection.

ADVANTAGE - The vaccination procedure provides high level protection against Chlamydia infection.

ABSTRACTED-PUB-NO: WO 200034498A

EQUIVALENT-ABSTRACTS:

CHOSSEN-DRAWING: Dwg. 0/5

DERWENT-CLASS: B04 D16

CPI-CODES: B04-E03F; B04-N03; B14-S11B; D05-H12A; D05-H12E; D05-H17A;

First Hit

L4: Entry 28 of 32

File: DWPI

Aug 6, 2002

DERWENT-ACC-NO: 2000-256988

DERWENT-WEEK: 200266

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TITLE: Attenuated gram-negative *Salmonella* cells, comprising inactivated genes in the SPI2 locus and useful for vaccinating against a range of disorders associated with microbial infections such as stomach and cervical cancers

INVENTOR: APFEL, H; GUZMAN, C A ; HENSEL, M ; HUECK, C ; MEDINA, E ; GUZM, N C A

PATENT-ASSIGNEE: CREATOGEN BIOSCIENCES GMBH (CREAN), CREATOGEN AG (CREAN)

PRIORITY-DATA: 1998EP-0116827 (September 4, 1998)

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## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> <a href="#">JP 2002524077 W</a>	August 6, 2002		181	C12N015/09
<input type="checkbox"/> <a href="#">WO 200014240 A2</a>	March 16, 2000	E	147	C12N015/31
<input type="checkbox"/> <a href="#">AU 9958605 A</a>	March 27, 2000		000	C12N015/31
<input type="checkbox"/> <a href="#">EP 1108034 A2</a>	June 20, 2001	E	000	C12N015/31
<input type="checkbox"/> <a href="#">BR 9914479 A</a>	June 26, 2001		000	C12N015/31

DESIGNATED-STATES: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP2002524077W	September 3, 1999	1999WO-EP06514	
JP2002524077W	September 3, 1999	2000JP-0568983	
JP2002524077W		WO 200014240	Based on
WO 200014240A2	September 3, 1999	1999WO-EP06514	
AU 9958605A	September 3, 1999	1999AU-0058605	
AU 9958605A		WO 200014240	Based on
EP 1108034A2	September 3, 1999	1999EP-0946122	
EP 1108034A2	September 3, 1999	1999WO-EP06514	
EP 1108034A2		WO 200014240	Based on
BR 9914479A	September 3, 1999	1999BR-0014479	
BR 9914479A	September 3, 1999	1999WO-EP06514	

BR 9914479A

WO 200014240

Based on

INT-CL (IPC): A61 K 39/00; A61 K 39/106; A61 K 39/112; A61 K 39/12; A61 K 39/245;  
A61 K 39/29; A61 K 48/00; A61 P 31/04 ; A61 P 31/12; A61 P 35/00; C07 K 14/005; C07  
K 14/195; C07 K 14/255; C07 K 14/47; C07 K 16/12; C07 K 19/00; C12 N 1/21; C12 N  
1:21; C12 N 7/00; C12 N 15/09; C12 N 15/31; C12 N 15/62; C12 N 15/63; C12 N 15/74;  
C12 R 1:42; C12 N 1/21; C12 N 1/21; C12 R 1:01; C12 R 1:42; C12 R 1:63;  
C12 R 1:42; C12 N 1/21

ABSTRACTED-PUB-NO: WO 200014240A

## BASIC-ABSTRACT:

NOVELTY - Attenuated gram-negative cells (HC1), especially Salmonella, in which at least 1 gene in the SPI2 locus has been inactivated resulting in attenuation/reduction of virulence compared to the wild type cell, are new.

## DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

- (1) an isolated nucleic acid molecule (NAM1) comprising at least 50 nucleotides:
  - (a) of 2 defined nucleic acid sequences ((I) and (II));
  - (b) of an allele of (I) and/or (II); or
  - (c) of a nucleic acid sequence which hybridizes under stringent conditions to (I) and/or (II);
- (2) a recombinant vector (VEC1) comprising NAM1;
- (3) a host cell (HC1) comprising either NAM1 or VEC1;
- (4) a polypeptide (PEP1) comprising:
  - (a) one of 17 defined amino acid sequences ((XXI) - (XXXVII)) given in the specification; or
  - (b) a sequence 60% homologous to (XXI) - (XXXVII);
- (5) an antibody directed against PEP1;
- (6) a fusion protein (PEP2) comprising PEP1, which has been inserted, deletion-inserted or fused C- or NH2-terminally with at least one heterologous peptide;
- (7) a composition comprising HC1 and an adjuvant;
- (8) a method (A) for producing a living vaccine (i.e. HC1), comprising providing a living gram negative cell comprising the SPI2 locus and inactivating at least 1 gene of the locus to obtain attenuated HC1 cells;
- (9) a method for the detection of attenuated cells (i.e. HC1) comprising providing a sample containing the cell and detecting a property not present in the wild type cells;
- (10) a method (B) for establishing a library of attenuated gram-negative cells for the presentation of an antigen to a host, comprising obtaining at least 2

attenuated gram-negative cells (i.e. HC1), determining the pathogenicities of the cells and determining the relation of those pathogenicities;

(11) the use of the SPI2 locus, NAM1 and VEC1 for the preparation of HC1 for the presentation of an antigen to a cell; and

(12) an isolated nucleic acid molecule (NAM2) comprising at least 100 nucleotides:

(a) of 2 defined nucleic acid sequences ((XXVIII) and (IXXX)); or

(b) of a nucleic acid sequence which hybridizes under stringent conditions to (XXVIII) and/or (IXXX).

ACTIVITY - Cytostatic; anti-arteriosclerotic; anti-Alzheimer's; virucide; hepatotropic; antiinflammatory; bactericide.

MECHANISM OF ACTION - Vaccine.

The presence of beta -galactosidase ( beta -gal) (which acted as an antigen) specific antibodies in intestinal washes from mice immunized with MvP101 or MvP103 (sseC::aphT and sseD::aphT mutant *Salmonella typhimurium* strains) carrying pAH97 was investigated 52 days after immunization. It was found that both carriers stimulated the production of significant amounts of beta -gal-specific immunoglobulin (Ig) A and to a lesser extent, favored the transudation of antigen-specific IgG in the intestinal lumen. Immunization with MvP103/pAH97 resulted in 4% of the total Ig obtained from intestinal lavages being IgA specific for beta -gal and 0.25% of the Ig was IgB specific for beta -gal. Immunization with MvP101/pAH97 resulted in 4.25% of the total Ig obtained from intestinal lavages being IgA specific for beta -gal and 1% of the Ig was IgB specific for beta -gal. No significant differences were observed among the mucosal responses to the different recombinant clones.

USE - The attenuate cells are used as carriers for presenting bacterial, viral or tumor antigens to a host and are capable of expressing the nucleic acid molecules in a target cell, especially a macrophage (claimed). Therefore, the cells may be used for the preparation of a prophylactic or therapeutic composition for the treatment of a chronic disease caused by a bacterium or virus (claimed). Preferably, the disease is either a Salmonella infection or a tumor. The cells may therefore be used to vaccinate against a range of bacterial and viral pathogens such as *Helicobacter pylori* (directly associated with stomach cancer), Chlamydia pneumoniae (associated with arteriosclerosis and Alzheimer's disease), *Borrelia burgdorferi*, *Nanobacteria* (found in the chronically diseased kidneys of patients with crystalline deposits), Hepatitis virus (causative agent of Hepatitis B and C and associated with liver cancer), Human papilloma virus (HPV) (associated with cervical cancer) or Hepes virus (claimed). The nucleic acids may also be used for the detection of in vivo inducible promoters.

ABSTRACTED-PUB-NO: WO 200014240A

EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.0/20

DERWENT-CLASS: B04 D16

CPI-CODES: B04-B04C; B04-C01; B04-E02F; B04-E08; B04-F10A8; B04-F10A8E; B04-G01; B04-N04; B04-N0400E; B11-C07A; B11-C08E1; B11-C09; B12-K04A; B14-A01A8; B14-A02A5; B14-A02B3; B14-F07; B14-G01; B14-H01; B14-J01A4; B14-N10; B14-N12; B14-S03; B14-S11; D05-C11; D05-H04; D05-H07; D05-H08; D05-H09; D05-H11; D05-H12B2; D05-H12C;

D05-H12F; D05-H14A1; D05-H17B; D05-H17C; D05-H18;

## Search Results - Record(s) 1 through 17 of 17 returned.

- 
1. 20040131630. 04 Nov 03. 08 Jul 04. Two-step immunization procedure against chlamydia infection. Brunham, Robert C., et al. 424/184.1; C12Q001/68 A61K039/00 A61K039/38.
- 
2. 20040126382. 04 Nov 03. 01 Jul 04. Two-step immunization procedure against chlamydia infection. Brunham, Robert C., et al. 424/184.1; C12Q001/68 A61K039/00 A61K039/38.
- 
3. 20020168382. 03 Dec 99. 14 Nov 02. TWO-STEP IMMUNIZATION PROCEDURE AGAINST CHLAMYDIA INFECTION. Brunham, Robert C., et al. 424/200.1; A61K039/02.
- 
4. 20020142001. 07 Jan 02. 03 Oct 02. DNA immunization against Chlaymdia infection. Brunham, Robert C.. 424/184.1; A61K039/00 A61K039/38.
- 
5. 20020110542. 12 Aug 99. 15 Aug 02. DNA IMMUNIZATION AGAINST CHLAMYDIA INFECTION. BRUNHAM, ROBERT C.. 424/93.2; 424/263.1 424/93.21 435/320.1 435/69.1 514/44 A61K048/00 A61K039/118.
- 
6. 6696421. 12 Aug 99; 24 Feb 04. DNA immunization against chlamydia infection. Brunham; Robert C.. 514/44; 424/184.1 424/263.1 435/320.1 435/69.1. A61K048/00 A61K039/00 A61K039/118 C12N015/63 C12N015/00.
- 
7. 6676949. 03 Dec 99; 13 Jan 04. Two-step immunization procedure against Chlamydia infection. Brunham; Robert C., et al. 424/263.1; 424/200.1 424/93.1 435/252.1 435/320.1 435/325 435/419 435/455 435/468 435/471 435/7.36 530/350 536/23.2 536/23.5 536/23.7 536/24.1 536/24.31 800/278 800/295 800/298. C12N015/31.
- 
8. 6632663. 22 Sep 99; 14 Oct 03. DNA immunization against chlamydia infection. Brunham; Robert C.. 435/320.1;. C12N015/63.
- 
9. 6344202. 07 Apr 98; 05 Feb 02. DNA immunization against chlaymdia infection. Brunham; Robert C.. 424/263.1; 424/185.1 530/350 530/389.5 530/412 536/22.1 536/23.1 536/23.7. A61K039/118 A61K039/00 C07K001/00 C07H019/00 C07H021/02.
- 
10. 6235290. 11 Jul 97; 22 May 01. DNA immunization against chlaymdia infection. Brunham; Robert C.. 424/263.1; 424/185.1 530/350 530/389.5 530/412. A61K039/118 A61K039/00 C07K001/00 C07K016/00.
- 
11. WO002095413A2. 23 May 02. 28 Nov 02. PHAGE HOST <i>CHLAMYDIA</i> INVOLVED IN VASCULAR DISEASE. BRUNHAM, ROBERT C, et al. G01N033/68; G01N033/569 C12Q001/68 C12N015/10.
- 
12. WO009802546A2. 11 Jul 97. 22 Jan 98. DNA IMMUNIZATION AGAINST CHLAMYDIA INFECTION. BRUNHAM, ROBERT C. C12N015/31; A61K031/70 C07K014/295 A61K039/118.
- 
13. WO 200295413A. Method for identifying a subject susceptible to vascular disease (e.g. abdominal aortic aneurysm) by detecting the presence or absence of a bacteriophage Phi Cpn1 host Chlamydia component in the sample, or an antibody to the component. BLANCHARD, J, et al.

C12N015/10 C12Q001/68 G01N033/569 G01N033/68.

- 
14. US 6235290B. DNA Immunization against Chlamydia is useful for generating a protective immune response and treating chlamydial infections of the lung, especially Chlamydia trachomatis. BRUNHAM, R C. A61K039/00 A61K039/118 C07K001/00 C07K016/00.
- 
15. WO 200121811A. New non-replicating vector comprising a Chlamydia trachomatis serine threonine kinase gene is useful as a DNA vaccine against chlamydial infection, e.g. lung infection caused by C. trachomatis or C. pneumoniae. BRUNHAM, R C. A61K031/711 C12N015/54 C12N015/63 C12N015/85.
- 
16. WO 200034498A. Vaccination against diseases caused by Chlamydia infection involves initial administration of attenuated bacteria containing nucleic acid encoding Chlamydia protein, followed by administration of Chlamydia protein. BRUNHAM, R C, et al. A61K031/70 A61K035/74 A61K035/76 A61K038/00 A61K039/00 A61K039/02 A61K039/112 A61K039/118 A61K039/38 A61K048/00 A61P015/00 A61P027/02 A61P031/04 C12N001/20 C12N001/21 C12N001:21 C12N015/09 C12N015/31 C12N015/86 C12N015/87 C12Q001/68 C12R001:42 C12N001/21 C12R001:42 C12R001:42 C12N001/21.
- 
17. US 6344202B. Immunogen for protection against Chlamydia contains non-replicative vector - expressing major outer membrane protein, provides cellular and recall responses, specifically against C. trachomatis. BRUNHAM, R C. A61K031/70 A61K038/00 A61K039/00 A61K039/118 A61K039/38 A61K048/00 A61P031/04 C07H019/00 C07H021/02 C07K001/00 C07K014/295 C12N015/00 C12N015/09 C12N015/31 C12N015/63.
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[Prev Page](#)    [Next Page](#)    [Go to Doc#](#)

First Hit

L1: Entry 1 of 17

File: PGPB

Jul 8, 2004

PGPUB-DOCUMENT-NUMBER: 20040131630  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20040131630 A1

TITLE: Two-step immunization procedure against chlamydia infection

PUBLICATION-DATE: July 8, 2004

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
<u>Brunham, Robert C.</u>	Vancouver		CA	
Murdin, Andrew D.	Newmarket		CA	

APPL-NO: 10/ 699683 [PALM]  
DATE FILED: November 4, 2003

## RELATED-US-APPL-DATA:

Application 10/699683 is a division-of US application 09/453289, filed December 3, 1999, US Patent No. 6676949

Application is a non-provisional-of-provisional application 60/110855, filed December 4, 1998,

INT-CL: [07] C12 Q 1/68, A61 K 39/00, A61 K 39/38

US-CL-PUBLISHED: 424/184.1

US-CL-CURRENT: 424/184.1

REPRESENTATIVE-FIGURES: NONE

## ABSTRACT:

A host is immunized against infection by a strain of Chlamydia by initial administration of an attenuated bacteria harbouring a nucleic acid encoding a Chlamydia protein followed by administration of a Chlamydia protein in ISCOMs. This procedure enables a high level of protection to be achieved.

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L6: Entry 12 of 29

File: PGPB

Sep 26, 2002

DOCUMENT-IDENTIFIER: US 20020136742 A1

TITLE: VACCINES FOR CHLAMYDIA PSITTACI INFECTIONS

## CLAIMS:

1. A vaccine composition which is protective against Chlamydia psittaci infections in animals comprising an immunogenic amount of a C. psittaci major outer membrane protein (MOMP) polypeptide lacking regions VD1 and VD2.
2. The vaccine composition of claim 1, wherein the vaccine comprises VD3 and VD4 of MOMP.
3. The vaccine composition of claim 1, wherein the polypeptide comprises VD3 and VD4 of MOMP.
6. The vaccine composition of claim 1, wherein the amino acid sequence of the MOMP polypeptide is selected from the group consisting of: SEQ ID NO: 1 and SEQ ID NO: 2.
9. A Chlamydia psittaci major outer membrane protein (MOMP) polypeptide lacking regions VD1 and VD2.
10. The polypeptide of claim 9, comprising VD3 and VD4 of MOMP.
27. A method of preventing a Chlamydia psittaci infection in a subject comprising administering to the subject an immunizing amount of an expression vector comprising a eukaryotic promoter functionally linked to a nucleic acid encoding a C. psittaci major outer membrane protein (MOMP) polypeptide lacking regions VD1 and VD2.

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